Ever Wonder What Causes Earthquakes?

It's probably not something you think about first when earthquakes are mentioned, but knowing what causes these shakers can help you understand your surroundings.

The earth is divided into three main layers — a hard outer crust, a soft middle layer and a center core. The outer crust is broken into massive, irregular pieces called "plates." These plates have been moving very slowly for billions of years, driven by energy forces deep within the earth. It is this movement that has shaped the physical features of the earth — mountains, valleys, plains and plateaus. Earthquakes occur when these moving plates grind and scrape against each other.

In California, two of these plates meet: the Pacific Plate and the North American Plate. The Pacific Plate covers most of the Pacific Ocean floor and the California coastline. The North American Plate stretches across the North American continent and parts of the Atlantic Ocean. The primary boundary between them is the San Andreas fault. It is more than 650 miles long and extends 10 miles deep. Many smaller faults, such as the Hayward fault in the north and the San Jacinto fault in the south, branch from the San Andreas fault. Experts suspect there are many other faults that haven't been discovered yet.

The Pacific Plate grinds northwestward past the North American Plate at a rate of about two inches per year. Parts of the San Andreas fault system adapt to this movement by a constant "creep" resulting in frequent, but moderate, earth tremors. In other areas, movement is not constant and strain can build up for hundreds of years resulting in strong earthquakes when it's released.

Unlike other natural disasters, there is no warning for earthquakes. One could hit today, tomorrow, or next week. Future earthquakes are a serious threat to Californians who could face loss of life, injury and property damage. Consider the sizable damage caused by past quakes.

Some Significant California Earthquakes

- **Northridge**, M6.7 — January 17, 1994
  57 deaths — more than 11,000 injuries — $40+ billion in damage
- **Landers,** M7.3**/Big Bear**, M6.7 — June 28, 1992
  1 death — $93 million in damage
- **Humboldt County**, M6.9 — April 25, 1992
  $60 million in damage
- **Sierra Madre**, M5.8 — June 28, 1991
  1 death — over 30 injuries — $33.5 million in damage
- **Upland**, M5.5 — February 28, 1990
  38 injuries — $10.4 million in damage
- **Loma Prieta**, M7.1 — October 17, 1989
  63 deaths — 3.757 injuries — $5.9 billion in damage
- **Whittier-Narrows**, M5.9 — October 1, 1987
  Aftershock, M5.3 — October 4, 1987
  8 deaths — 200 injuries — $358 million in damage
- **Palm Springs**, M5.9 — July 8, 1986
  $5.3 million in damage
- **Morgan Hill**, M6.2 — April 24, 1984
  27 injuries — $10 million in damage
- **Coalinga**, M6.4 — May 2, 1983
  47 injuries — $31 million in damage
- **Kern County**, M7.7 — July 21, 1952
  12 deaths — 18 injuries — $50 million in damage
- **San Francisco**, M8.3 — April 18, 1906
  700-800 deaths — $400 million in damage